

Claims

1. A container for storing hydrogen comprising:
 - an outer shell having an inlet for inputting hydrogen gas and an outlet for outputting hydrogen gas;
 - a thermally conductive liner lining an interior of the outer shell; and
 - an inner hydride core in communication with the inlet and the outlet for storing the hydrogen gas.
2. The container according to claim 1 wherein the thermally conductive liner comprises a carbon foam core.
3. The container according to claim 1 wherein the outer shell is constructed of a metallic material selected from the group consisting of steel, aluminum, a steel alloy, and an aluminum alloy.
4. The container according to claim 1 wherein the thermally conductive liner comprises a carbon foam material that generally conforms to a shape of the metallic shell.
5. The container according to claim 1 wherein the thermally conductive liner comprises a carbon foam coating that coats an interior of the outer shell.
6. The container according to claim 1 wherein the thermally conductive liner comprises a carbon foam material with a series of fins interspersed with the inner hydride core to enhance thermal transfer of thermal energy between the hydride and the ambient environment around the container.
7. The container according to claim 1 wherein the thermally conductive liner protects the metallic shell from hydride expansion during recharging of the container or tank with pressurized hydrogen gas.
8. The container according to claim 1 wherein the thermally conductive liner transfers heat from the hydrogen gas during filling or recharging or compressing of hydrogen gas within the container or tank to improve the ability to fully charge the tank and improve the accuracy of fuel readings.
9. The container according to claim 1 wherein the container comprises a fuel tank of a hydrogen-powered vehicle selected from the group consisting of a fuel-cell vehicle and an internal combustion engine vehicle.

10. The container according to claim 1 wherein the outer shell comprises external fins for promoting heat dissipation from the container during recharging of the container.